

The Federal Communications Commission

Washington, DC 20554

In the matter of:

Schools and Libraries Universal Services Support
Mechanism

CC Docket Number: 02-6

**COMMENTS BY AVAYA, INC. TOWARD THE
THIRD REPORT AND ORDER AND
SECOND FURTHER NOTICE OF PROPOSED RULEMAKING**

Table of Contents:

Introduction:	1
Contrast to private industry:	2
E-rate funding rules and the Telephony Revolution:	2
How E-rate funding rules drive applicants to make economically inefficient choices:.....	3
The economic inefficiency:	3
Total Cost of Ownership vs. expediency:	4
The Telephony Revolution provides even more opportunities to save the E-rate program and its beneficiaries money:	4
The power of server based Telephony processing:.....	6
Additional savings for the E-rate program and the applicants:	7
Conclusion:	8

Introduction:

The current rules for the distribution of funds by the Schools and Libraries Program of the Universal Services Fund (E-rate) are biased in favor of the delivery of services from network-based resources. For instance, only in very limited circumstances can an applicant gain reimbursement for on-premise Telephony servers. The program favors Centrex Service and individual Central Office circuits over the cost saving aggregation of circuits one would typically find in a commercial business. Although justified at one time, technological advances over the last several years have made the bias towards network-based delivery of telephony services an inefficient choice for end users. As a result, the E-rate

1 program and its beneficiaries are spending millions of dollars more than if new telephony technologies
2 were made available for reimbursement.

3 The current structure of E-rate reimbursement is also preventing schools and libraries from
4 accessing the benefits of value-added features such as communications solutions that empower school
5 personnel to respond more effectively in emergency situations.

6 **Contrast to private industry:**

7
8 In most corporate enterprises today the one-time distinction between the way voice and data are
9 handled has been erased. For many organizations voice is now treated as a high-value application that
10 flows over networks originally constructed to handle only data. At a growth rate of 28% per year, Internet
11 technologies are being used to transport voice conversations in today's commercial enterprises; this is
12 the concept known as Voice over the Internet Protocol (VoIP).

13 Beyond VoIP in the enterprise the Internet Protocol is increasingly being used to carry Telephony
14 applications (IP Telephony). Great efficiencies are being gained and dramatic new ways of using the
15 telephone are emerging. Revolutionary Telephony applications - such as the IP Softphone that allows a
16 once desk-bound worker to take a virtual multi-function office telephone with her anywhere on the planet
17 where an Internet connection is available - are transforming the way people communicate and work.
18 Much in the way a revolution occurred in data processing with the advent of Internet technologies a
19 revolution is now occurring with regard to Telephony applications. Sixteen (16) Million IP Telephony lines
20 are deployed in commercial businesses today and that number is growing at twenty-eight percent (28%)
21 per year.

22 **E-rate funding rules and the Telephony Revolution:**

23
24 The rules for the distribution of E-rate funds need to reflect what businesses have learned as the
25 Telephony technological revolution is taking place. The current economics of the program inhibit adoption
of new technologies in our schools and libraries because they reward investment in voice solutions that

1 resemble the way data processing was accomplished prior to the Internet revolution. Plain Old
2 Telephone Service (POTS) delivered from mainframe Central Offices are the only way most schools and
3 libraries can gain reimbursement for Telephony services. Under the current rules only those applicants
4 who are eligible for the Internal Connections category of reimbursement – a slim percentage of the total
5 applicant population - can gain reimbursement for the products that are giving today's businesses great
6 economic efficiencies.

7 The proposed additional restrictions on Internal Connections eligibility will cause even more
8 applicants to make the less economically efficient choice described below and as a result increase the
9 overall costs to the program.

10 **How E-rate funding rules drive applicants to make economically inefficient** 11 **choices:**

12 E-rate applicants are driven by the E-rate funding rules to make economically inefficient
13 technology choices. To improve their chances of receiving reimbursement under the E-rate program most
14 applicants recognize the bias in the funding rules toward the delivery of services from network-based
15 resources. Schools and libraries across the country apply for reimbursement of individual Central Office
16 circuits for each person who needs a phone. Some applicants do use their own budget and buy key
17 systems and premise-based switchboards to share lines, but on the whole most schools and libraries
18 purchase more trunk lines than you would find in your typical business. The schools and libraries also
19 apply for reimbursement for a separate set of circuits to carry data.

20 **The economic inefficiency:**

21 A business today would think about the purchase of individual lines as a very inefficient means of
22 delivering Telephony services. First of all, the break even point for deciding to purchase a digital facility
23 such as a T1.5 circuit is typically about eight individual lines. A T1.5 circuit provides enough bandwidth to
24 accommodate 24 individual conversations; a three-to-one cost advantage.
25

1 Most businesses would look at the cost advantages of a digital service over that of the individual
2 lines and decide to purchase a communications system that would accommodate a digital facility. The
3 initial investment would typically be returned at some future point in the form of longer-term savings.

4 **Total Cost of Ownership vs. expediency:**

5 The E-rate funding distribution rules take away the incentive for applicants to perform a Total
6 Cost of Ownership (TCO) analysis. Quite the contrary, applicants look at the funding rules and see that
7 their best probability to obtain reimbursement lies in applying for individual circuits. The funding rules
8 provide disincentive for most applicants to invest in the technologies that would make the most economic
9 sense for them and the E-rate program. So unlike in the marketplace where individuals acting in their own
10 best interest results in economic efficiencies on the macro level, the E-rate funding rules result in the
11 program spending a great deal more to provide POTS than would occur if individual applicants were
12 encouraged to make the more long-term fiscally responsible choice by looking at the Total Cost of
13 Ownership.

15 **The Telephony Revolution provides even more opportunities to save 16 money for the E-rate program and its beneficiaries:**

17 The Telephony Revolution talked about above and the concept that high-value Telephony
18 applications that are delivered over the Internet Protocol adds even more opportunity to save the E-rate
19 program and its beneficiaries money. When Telephony is thought of as an application to be carried over
20 the Internet Protocol, Telephony networks can be reconfigured to generate new value.

21 Take for instance the typical school district. If a school district were a for-profit business, installing
22 individual telephone lines for individual users in a distributed environment like a school district would be
23 fiscally irresponsible. By contrast, businesses today have applied the client-server model to Telephony.
24 This model dramatically reduces costs while making high-value Telephony applications available to
25 locations where in the past the services were cost prohibitive.

1 For instance, the Internet Protocol is being used to tie locations together in cost effective
2 manners. Public Switched Telephone Network (PSTN) trunk circuits are aggregated to central locations
3 where high-bandwidth digital facilities are cost-justified. PSTN access for the satellite locations is
4 backhauled to the central server over consolidated circuits that are used to carry both voice and data.

5 Aggregating PSTN traffic to the central locations not only cost-justifies high-bandwidth PSTN
6 access, in addition calls between locations on this distributed “private” converged network flow without
7 additional charge between satellite locations. Message units once charged for calls between locations of
8 an organizational entity, which both the applicants and the E-rate program currently fund, are reduced.
9 Voice packets and Telephony features flow between locations just like any data application on a Local
10 Area Network. This way the satellite locations also get the benefit of high-value Telephony applications
11 that were previously cost prohibitive to deploy in locations without a significant enough population of end-
12 users to justify the expense.ⁱ

13 **Additional benefits:**

14 The new model of call processing can also make it possible for schools and libraries to organize
15 around Telephony in the same economically efficient ways that businesses do. For instance, one
16 attendant can answer calls from many locations as opposed to having an individual attendant in each
17 location. This technique drives down labor costs for businesses and would do the same for schools and
18 libraries.

19 Schools and libraries may also gain operational efficiencies by investing in technologies that
20 provide self-service and automated functions. Businesses use technology applications such as
21 Messaging (voicemail) and Interactive Response (automated voice prompting systems) to drive down
22 costs.

23 In the school environment, applications such as automated attendance/truancy tracking,
24 automated substitute location, and homework hotlines make powerful economic sense.ⁱⁱ These
25 investments pay off for the community by driving down non-technology costs like the insurance liability

1 associated with truancy and the cost of lost productivity from the process of filling substitute positions. In
2 addition these applications dramatically improve the schools' and libraries' ability to communicate with the
3 communities they serve.

4 **Improving the way schools and libraries react to emergency situations:**

5 Changing the rules to allow applicants to make the more economically efficient choices typically
6 seen in business would also carry with it additional benefits. Many server-based features can dramatically
7 improve the ways in which schools respond to emergency situations.

8 Consider the communication server based feature called Crisis Alert. A communication server
9 can be configured to "listen" for significant digits that when dialed empower emergency response
10 activities beyond the summoning of external emergency services. When 9-1-1 and other strings of
11 emergency digits are dialed, not only is the call completed to the Public Safety Answering Position but as
12 well simultaneously onsite individuals are notified with a siren-like tone on their telephone. The tone does
13 not stop until the recipient of the call acknowledges the emergency. The digital display on the call
14 recipients' telephone tells them who made the call and where they are physically located. Onsite
15 personnel can intervene in the call, rush to the aid of the caller, and be empowered to better direct
16 external responding emergency personnel when they arrive.

17 Contrast this to the current state where an emergency call might be initiated by a teacher from
18 their cell phone. No location information is available, reaction options are limited, and little proactive
19 planning can occur.

20 **The power of server based Telephony processing:**

21 Crisis Alert is an example of just one of many server-based features that can empower
22 responsible individuals in the schools to take advantage of those critical moments when most lives are
23 saved.

24 Other server based Public Safety features include:
25

- the ability of a call recipient to silently notify responsible parties that a malicious or threatening call is in progress without the caller knowing while the system simultaneously captures trace information and records the call;
- the ability to activate paging systems, including visual paging systems to accommodate those with hearing disabilities, by simply dialing extension numbers;
- the ability to announce over the paging system through any telephone handset;
- the ability to bi-directionally page through speaker-enabled phones in classrooms and hallways;
- the ability to automatically initiate mass notifications and other communication-based emergency response tools;
- the ability to lock and unlock doors by dialing digits on a telephone;
- the ability to carry on-campus wireless phones that have all the emergency response and feature capability of a desk phone;
- the ability to mirror desk phones with cell phones to instantly switch from one to the other; and
- many other features that are built into the base price of many on-premise Telephony servers

Additional savings for the E-rate program and the applicants:

Because server based IP Telephony makes it possible for the same wire to carry both voice and data from the Telephony server to the desktop the need to run separate wires for a computer and a phone on a campus is eliminated. Both devices can use the same single set of wires.

Additionally unlike Central Office delivered voice, IP phones can be moved from jack-to-jack, just like a Personal Computer can be moved, without costly service visits. E-rate and the applicant currently share the cost of these service visits.

Server-based features that are typically included in the base price can dramatically reduce other operating costs for the schools. For instance, most of the money spent on bridging services is spent for conference calls of five parties or less. Servers can include free features such One-button Conference and Six-Party Meet-me Conferencing.

In some servers Messaging (which includes voicemail, fax, and text to speech email retrieval) is included free in the base price. Investment by schools in these servers would avoid the need for E-rate to fund Messaging and would greatly improve the school's abilities to communicate with parents and the community.

Another financial impact on the program and its participants is the costs of management. In a converged network, management is easier and significantly less costly. The entire system is managed as

1 one entity. Contrast this to today's situation of individual Central Office based circuits and disconnected
2 communication islands and you see that the single management platform made possible in a converged
3 solution is much more efficient and cost effective. Both the schools and the E-rate program would see
4 relief from the burden of these costs.

5 **Conclusion:**

6 In many ways the current method of distributing E-rate funds is economically inefficient. The E-
7 rate program has not recognized the Telephony Revolution that is bringing great efficiency gains to
8 businesses. On the whole, the E-rate program pays for far more for Plain Old Telephone Service than is
9 necessary while denying applicants access to valuable features that could save telephony cost and
10 provide greater operational efficiencies. Reform of the funding rules to reflect common business practices
11 such as Total Cost of Ownership analysis will save the program a great deal of money. These savings will
12 make it possible for more people to benefit from the program while improving the program's recipients'
13 ability to protect the children and to better communicate with the communities that they serve.

14 We urge the Commission to consider implementing funding rules that will encourage schools and
15 libraries to use the best practices found in business and reflect the economics and technological realities
16 of today's communications world.

17
18
19 P.S. Avaya, Inc. seeks the opportunity to participate in hearings or in other ways contribute to the
20 Commission's better understanding of the technical and economic issues discussed above with an eye
21 towards the creation of new rules that would guide applicants in making vendor decisions that take into
22 account the Total Cost of Ownership of the services funded by the E-rate.

23 In addition, below are a few suggestions on changes that will make the E-rate funds distribution
24 rules more economically efficiency and drive down total costs for the Program and its beneficiaries.

- 25 ➤ The rules for on-site telecommunications equipment should be amended to allow the funding of
premise-based communication servers if the use of premise-based communications servers will
result in a lower Total Cost of Ownership and a decreased burden on the E-rate program;

- Applicants should be required to include a Total Cost of Ownership analysis that takes into account, but is not limited to the following:
- ✓ a Total Cost of Ownership analysis of the expected multiple year costs of various PSTN trunking options including –
 - Central Office Centrex,
 - CO analog,
 - CO digital facilities,
 - IP based and other converged voice, such as
 - Voice over Cable;
 - Voice over Wireless LAN;
 - Voice over IP;
 - ✓ a Total Cost of Ownership analysis of the servicing costs anticipated for the duration of a communication system's expected lifecycle including:
 - Move and Change costs;
 - management costs;
 - Professional Service costs.

Respectfully submitted. Thank you for your consideration of our comments.

Dated this 10th day of March, 2004

ⁱ Satellite locations will typically be survivable with a small amount of PSTN access in the event that the circuit to the central server was lost.

ⁱⁱ Homework Hotline Services are reimbursable under the E-rate, but only if they are provided as a network based service. Attendance/truancy reporting and tracking, automated substitute location, and other applications are not reimbursable. These applications typically reside on the same server as Homework Hotline applications. The majority of cost in investing in this technology is the server and the base operating system. Once that initial investment is made, the other applications are simply add-on software modules. Each application that is added improves the return on investment of the initial purchase.